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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/898,204	07/03/2001	Todd Poynor	10010393-1	2214

7590 06/23/2004
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

VU, TUAN A

ART UNIT	PAPER NUMBER
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2124

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/898,204

Applicant(s)

POYNOR, TODD

Examiner

Tuan A Vu

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. This action is responsive to the application filed July 3, 2001.

Claims 1-15 have been submitted for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 9 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 9 recites the limitation "the memory" in line 8. There is insufficient antecedent basis for this limitation in the claim. This limitation is not described as to point out where it comes from or which previously recited element it pertains to; hence will be interpreted as a memory unspecific to any device.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-10, and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardoza, USPN: 5,630,049 (hereinafter Cardoza), in view of Mahler et al., USPN: 6,675,218 (hereinafter Mahler).

As per claim 1, Cardoza discloses a computer-implemented method for debugging an server operating system kernel (e.g. Fig. 1; *target or server ... system* – col. 4, lines 1-12) executing on a remote processing system that is coupled to a network, the kernel including a debugger control component (e.g. col. 8, lines 42-52; col. 23, lines 8-24; col. 24, line 64 to col. 25, line 14), and the system data processing including a network interface card (*Ethernet card* - col. 14, lines 1-11) and a debugger network component (e.g. device 55 – Fig. 3A), comprising:

detecting debugger messages received over the network (e.g. Fig 3A-B – Note: in a network session based communication scheme, detecting a message is inherent to such established session according to that scheme);

directing the debugger messages to the debugger network component (e.g. col. 9, lines 16-37; Fig. 3A-B – Note: receiving messages and parsing fields of packet is equivalent to directing messages to a debugger network component to filter the packet type);

communicating the debugger messages from the debugger network component to the debugger control component in response to the messages (e.g. col. 8, lines 1-41; Fig. 4; col. 27, lines 24-49).

But Cardoza does not explicitly disclose that the network interface card implements a protocol stack, including the layers from physical to application layer. But in view of the protocol layer disclosed in conjunction with the TCP/IP connection type of network (e.g. col. 28, lines 23-34; col. 8, line 55 to col. 9, line 45), the network layers as organized in a OSI-like stack is suggested. In a method to use interface to communicate network messages for kernel debugging (e.g. col. 5, lines 26-49; col. 10, lines 5-44) analogous to the communication of debug commands by Cardoza, Mahler discloses a protocol stack for criteria matching and kernel

processing of messages (e.g. Fig. 2-4). It would have been obvious for one of ordinary skill in the art at the time the invention was made to implement a kernel logic and network component at the server system by Cardoza so as to include therein a protocol stack as taught by Mahler (and suggested by Cardoza) so as to be able to perform kernel debugging activities and message routing control such that packets coming from the internet medium can be differentiated and filtered according to the protocol layer (as suggested by Cardoza) involved and thereby render the kernel task of analyzing and processing of messages much more efficient, error-free and focused as suggested by Mahler's approach.

As per claim 2, Cardoza in combination with Mahler teaches a debugger client system being coupled to the target system but does not explicitly disclose communicating client messages from the debugger control component to the debugger network component, then communicating from there to the protocol stack then from there to the client system. But in view of the communication established by Cardoza to communicate user's bi-directional messages for effecting kernel debug to be conducted to the target system according to the scheme of client originated debugger system (Fig. 1-3; *message to the host computer* - col. 15, lines 4-9), these limitations are implicitly disclosed.

As per claim 3, Cardoza discloses communicating non-debugger messages to a network interface system (e.g. *or a routine ... in the target operating system* - col. 9, lines 11-30; col. 10, lines 39-54 – Note: call back function in libraries matched by message fields identification and device specific information can be routines other than those called for the debugger).

As per claim 4, Cardoza does not explicitly disclose a port number; but official notice is taken that in a socket-based communication involving calls to effect remote procedures, the use

of a dedicated port for a particular process operating on such socket was a well-known concept in programming language at the time the invention was made, e.g. telnet port, file transfer port, CGI port. It would have been obvious for one of ordinary skill in the art at the time the invention was made to implement the connection between the host machine and the target machine such that the debugger network component therein is allotted a dedicated port as taught by known concepts because it would make it easy to track the communication link established on the port, thereby enabling logging of data and tracking of errors just from that single port link.

As per claim 5, Cardoza (combined with Mahler) discloses TCP/IP stack (col. 28, lines 23-34).

As per claim 6, Cardoza discloses saving debugger messages in memory of server processing system (e.g. col. 21, lines 10-19).

As per claim 7, Cardoza does not explicitly teach storing client messages from the debugger control component to memory of the server. However, the concept of building a message with a header for transmission across the internet (re claim 5 for Cardoza's TCP/IP communication protocol) inherently requires a temporary storage of the message prior to have it package according to the internet medium and its protocol format; hence the limitation to store client message in the server memory for reformatting before transmission back to the host user machine is implicitly disclosed.

As per claim 8, this claim is the apparatus claim of the method claim 1 and incorporates means for performing the same step limitations(i.e. detecting ; directing; communicating; performing) as recited therein; hence is rejected using the same corresponding rejections as set forth therein, respectively.

As per claim 9, Cardoza discloses a computing arrangement for debugging an operating system kernel in a server system that is coupled to a client system via a network, comprising:

a processor to execute the O.S. kernel, the kernel including a debugger control component or DCC (e.g. col. 8, lines 42-52; col. 23, lines 8-24; col. 24, line 64 to col. 25, line 14) and a networking subsystem component or NSC (e.g. device 55 – Fig. 3A);

the DCC configured to perform debugging operations in response to debugger messages received (e.g. col. 8, lines 1-19; Fig. 4; col. 27, lines 24-49), and the NSC to provide non-debugging messages to the kernel (col. 9, lines 11-30; col. 10, lines 39-54);

a network interface circuit (NIC) arrangement coupled to the processor and a memory (Fig. 2), the NIC arrangement configured with the network protocol (col. 8, line 55 to col. 9, line 45) and a debugger network component (DNC), the debugger network component configured to communicate debugger messages to the debugger control component in the kernel (e.g. col. 9, lines 16-37; Fig. 3A-B).

But Cardoza does not disclose that the network protocol used by the NIC arrangement comprises a protocol stack to detect debugger messages and direct messages to the DNC. But this limitation has been addressed in claim 1 using Mahler.

As per claim 10, refer to claim 2 for corresponding rejection.

As per claims 12-13, refer to claims 4-5, respectively.

As per claim 14, based on the teachings by Cardoza's (combined with Mahler's) on using a TCP/IP stack to process messages from the host and back to the host, this claim is rejected using the same rationale as set forth in claim 2.

6. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cardoza , USPN: 5,630,049, in view of Mahler et al., USPN: 6,675,218, as applied to claims 10 and 14, further in view of Barrett et al., USPN: 5,935,262 (hereinafter Barrett).

As per claim 11, Cardoza discloses writing messages to memory (re claim 6) but does not teach a first shared memory interface and second memory interface coupled respectively with the DCC and the DNC, both interfaces configured to write debugger and client messages to a shared memory area. The use of shared memory in a paradigm wherein a host client system is interacting using communications via a network or bus interface arrangement or circuitry with a target device for remote debugging thereof was a known concept in the art of debugging kernel and hardware/software emulation. Barrett, in a method to collect debug information from a target network device via an interface card, discloses a shared memory within the interface itself (e.g. col. 25, line 47 to col. 26, line 10; col. 30, lines 30-54; Fig. 23). It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide a shared memory accessible from within the interface arrangement as taught by Barrett so that it can provide writable interfaces to both the DCC and the DNC as disclosed by Cardoza so as to enable storing of debugger messages to the shared memory. The motivation would be that having information commonly available for access (as in share storage) for debug analysis from the standpoint of the debugger control component as well as the network component as seen by the host client would enhance the bi-directional manner by which messages or program data as suggested by Cardoza can be accessed or stored thereby leading to fast adjustment and possibly exception handling by the host's administrative operations, i.e. enabling more dynamic controlling or time-efficient support of the debug as taught by Barrett.

As per claim 15, this claim corresponds to claim 11; hence is rejected using the rationale as set forth therein.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Pat No. 5,721,876 to Yu al., disclosing shared memory and protocol stack for kernel emulation and test.

U.S. Pat No. 5,611,044 to Lundebj et al., disclosing kernel tracking of events and filtering of SCSI events.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan A Vu whose telephone number is (703)305-7207. The examiner can normally be reached on 8AM-4:30PM/Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki can be reached on (703)305-9662.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

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or faxed to:

(703) 872-9306 (for formal communications intended for entry)

or: (703) 746-8734 (for informal or draft communications, please consult Examiner before using this number)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. , 22202. 4th Floor(Receptionist).

Art Unit: 2124

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VAT

June 16, 2004



ANIL KHATRI
PRIMARY EXAMINER